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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

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BC

B-I-4

Hardness of low-melting alloys at different temperatures. II. Binary alloys the components of which combine chemically. V. P. Shishokin and V. A. Agreva (Tsvet. Met., 1932, 119—136).—Hardness, m.p., and temp. coeff. of hardness (I) were determined for Pb–Bi, Tl–Bi, Tl–Pb, Te–Bi, Al, Mg, and Te. The formation of intermetallic compounds is indicated. For Mg, Al, Zn, Cd, Sn, Te, Tl, Pb, and Bi the at. vol. varies inversely (except for Te and Bi) with hardness. Except for Sn (I) is parallel with the change in coeff. of expansion (II). (II) is inversely proportional to the m.p. In the binary eutectic systems (I) is > in pure metals, max. vals. being observed at or near the eutectic composition. Ch. Abs.

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The application of nomograms for metallographic computations. A. P. Shishokin. *Metallurgist* (U. S. S. R.) 1933, No. 1, 20-34. A discussion of the theory, methods of construction, and applications of nomograms for conversion of at. percentage into wt. percentage in binary and ternary systems, and for calcn. of elec. resistance and of Brinell hardness. H. W. Rathmann

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Two problems connected with the method of investigation of saline equilibria. V. P. Shishokin. Inst. anal. phys.-chim. (Leningrad) 6, 21-4(1933); cf. C. 21, 3802.—The problem of detg. the no. of solid phases in a system consisting of a liquid solvent and a solute of 2 substances in a state of solid soln. is discussed together with the problem of detg. the amt. of soln. impregnating a cryst. mass in contact with its soln. S. I. Madorsky

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/ **Hardness of magnesium tin and magnesium lead alloys at various temperatures.** V. P. Shishokin, V. A. Ageeva and V. I. Mikheeva. *Metallurg* 10, No. 11, 81-4 (1935).—The hardness of these alloys between 20 and 220° can be expressed by the equation $H = Ke^{\alpha t}$, where α is the temp. coeff. of hardness. This coeff. is high for eutectic alloys and low for the pure metals and intermetallic compds.

H. W. Rathmann

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PROCESSES AND PROPERTIES INDEX

*An Application of the Thermodynamic Method to the Investigation of Binary and Ternary Alloys. V. P. Shishokin (*Sbornik Leningrad. Ind. Inst.* (*Trans. Leningrad Indust. Inst.*), *Sect. Phys. Math.*, 1937, (4), 29-41; *C. Abs.*, 1939, **33**, 5793). —[In Russian.] The deviation of experimental data plotted as log *S* against 1/*T* from the theoretical straight line in binary, and from the rectilinear isotherm in ternary, systems gives an idea of the character of the physico-chemical processes taking place in the mutual alloying or solution of substances. The thermodynamic properties of a ternary system are determined from those of the binary systems which limit it. It is shown thermodynamically that the bismuth-cadmium-tin system is not an ideal system, since the data do not lie on a straight line but gradually deviate from it with a decrease of the bismuth concentration. In the same way, it is shown that the solid solution at the tin end of the cadmium-tin system represents a solution of monatomic cadmium in monatomic tin. Experimental data are plotted. N. B. V.

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M

*Thermal Coefficient of Hardness of Eutectic Alloys. V. P. Shishokin and I. D. Zaporozhez (*Zvet. Metally* (*Non-Ferrous Metals*), 1937, (5-6), 88-98; and *Izvest. Sekt. Fiziko-Khimich. Analiza* (*Ann. Sect. Anal. Phys.-Chim.*), 1938, 10, 161-186).—[In Russian.] The determination of the thermal coeff. of hardness of the ternary eutectic alloys in the systems Pb-Bi-Cd, Bi-Cd-Zn, Pb-Sn-Cd, Bi-Sn-Cd, Zn-Sn-Cd, Pb-Sn-Bi, Cd-Pb-Zn, and of the quaternary eutectic alloy in the system Bi-Sn-Pb-Cd, showed that for ternary systems this coeff. is 3-4 times greater and for the quaternary system 4-5 times greater than for the corresponding pure metals. The thermal coeff. of hardness of annealed alloys is on the whole lower than the thermal coeff. of the unannealed alloys in the systems Pb-Bi-Cd, Bi-Cd-Zn, Pb-Sn-Bi, Cd-Pb-Zn. Alloys containing tin and cadmium often show the reverse relation. The authors offer a tentative explanation.—N. A.

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PROCESSES AND PROPERTIES INDEX

*The Relation Between Chemical Composition and Temperature Coefficient of Plastic Deformation. V. P. Shishokin (*Izvest. Akad. Nauk S.S.S.R.* (*Bull. Acad. Sci. U.R.S.S.*), 1937, [Chem.], (6), 1341–1368).—[In Russian, with French summary.] The dependence of the plastic deformation F (which was found from the Brinell hardness and pressure of flow by extrusion) on the temperature can be expressed by the function $F = \gamma e^{\alpha t}$. The temperature coeff. of hardness was measured for bismuth, tin, cadmium, lead, thallium, gold, silver, aluminium, zinc, and magnesium, and the temperature coeff. of the pressure of flow for bismuth, tin, lead, cadmium, and thallium. For metals the temperature coeff. of hardness and of the pressure of flow increase directly with the coeff. of dilatation and inversely with the melting temperature. The temperature coeff. of hardness, measured by the static method, is identical with the temperature coeff. of the pressure of flow. The temperature coeff. of hardness increases with decrease of the rate of deformation used for measuring the hardness. When a polymorphic transformation occurs with increase in temperature, a sudden decrease of hardness and of pressure of flow is observed. The break in the temperature–hardness curves is explained by: (*a*) the melting of the constituents which form a eutectic, and (*b*) the transition of the admixtures into solid solution. The temperature coeff. of hardness, measured at various temperatures (for KCl, KBr, KI, AgCl, AgBr, AgI, $HgCl_2$, $HgBr_2$, HgI_2, Mg_2Sn, Mg_2Pb, and Bi_2Te_3), depends on: (*a*) the melting temperature; (*b*) the ratio of the ionic radii; and (*c*) the ionic polarization. Both the temperature coeff. of hardness of binary alloys which

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1ST AND 2ND ORDERS

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2

Solubility in mixed solvents. V. P. Shishokin and M. I. Muskina. *Bull. acad. sci. U. R. S. S., Classe sci. math. nat., Sér. chim.* 1938, 793–813(in French, 913–14).—A study of fusibility diagrams for (*a*) allylphenylthiourea (I)–$PhNH_2$ (II)–PhOH (III), (*b*) PhNHAc (IV)–II–III, (*c*) p-$C_6H_4Br_2$–II–III, (*d*) C_6H_5–II–III, (*e*) I–$PhNO_2$ (V)–NH_2COOEt (VI), (*f*) IV–V–VI, (*g*) I–V–VI, (*h*) I–V–allylmustard oil shows that the character of the isotherms in the fields of crystn. of the components of these systems can be explained by assocn.-dissocn. processes taking place in fusing these components. 10 references.

I. G. Tolpin

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Calculation of temperature coefficients of hardness and flow resistance. V. P. Shishokin. *Zavodskaya Lab.* 7, 995-6(1938); cf. *C. A.* 32, 96[4], 3316[9], and Gubkin and Zakharov, *C. A.* 31, 5252[9]. Chas. Blanc

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PROCESSES AND PROPERTIES INDEX

Influence of the time of loading on the strength of metals and their alloys. V. P. Shishokin and Yu. V. Shestopalova. *J. Tech. Phys.* (U. S. S. R.) 8, 1613-28 (1938).—The diam. d of the indentation produced by a ball (cf. C. A. 24, 2080) increases with the time t of loading, viz., $d = at^m$. The no. $m = 2n$ is termed "the velocity exponent of the *hardness*." It ranges, e. g., between 0.016 for Al and 0.112 for Sn, increasing in the order Cu, Ag, Sb, Zn, Cd, Pb and Bi. It increases with load, e. g., for Pb the increase is 20% for a 4-fold increase of the load. Binary eutectics have higher, and ternary eutectics still higher, m values than the composing metals. There are differences between the m values for cast and annealed eutectics. In the systems Bi-Sb (annealed at 220°), Bi-Cd (annealed at 120°), Bi-Pb (annealed at 100°) and Al-Zn (annealed at 300-320°) m varies almost parallel with the temp. coeff. of the hardness.

J. J. Bikerman

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m

2

***Physicochemical Properties of Alloys of Cadmium with Tin.** V. P. Shishokin, A. S. Andreev, and F. F. Bukin (*Izvest. Sekt. Fiziko-Khimich. Analiza (Ann. Sect. Anal. Phys.-Chim.)*, 1938, **11**, 65-99; *C. Abs.*, 1938, **32**, 8900). [In Russian.] Results are reported of a study extending over the whole range of cadmium-tin alloys. Curves of hardness, electrical conductivity, and thermal coeff. of electrical resistance confirm the existence of limited solid solutions of tin and cadmium, thermodynamic analysis showing them to be formed of the monatomic metals. The relative increase in hardness and the decrease in electrical conductivity of the tin-rich solid solution gradually fall with rise of temperature (20°-163° C.). The hardness of alloys of cadmium and tin at high temperatures is below the mean value of the hardnesses of the two constituent metals at the same temperature. The thermal coeff. of hardness of the alloys is also higher than that of the individual metals.

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Fusibility and chemical composition. V. P. Shishokin. *Byull. Vsesoyuz. Khim. Obshchestva im. D. I. Mendeleeva* 1939, No. 3–4, 47–8; *Khim. Referat. Zhur.* 1939, No. 8, 15.—The effects of a no. of factors on the mutual soly. of the components are discussed. For metallic systems such factors include the inner pressure of the components, the at. sizes, the valency and the crystal lattices of simple substances.

W. R. Henn

COMMON ELEMENTS

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PROCESSES AND PROPERTIES INDEX

M

*The Effect of Temperature on the Rate of Hardening Coefficient. V. P. Shishokin, V. A. Ageeva, and N. A. Vikhoreva (*Zhur. Tekhn. Fiziki*, 1940, 10, (6), 491–499).—[In Russian.] The rate of hardening coeff. is defined as n in the equation $H = aT^n$, which gives the hardness H as a function of the loading time T. The effect of temperature on the rate of hardening coeff. 1

was studied in the case of bismuth, lead, and tin, and the eutectic alloys in the systems bismuth-lead, bismuth-cadmium, bismuth-tin, lead-antimnoy, cadmium-zinc, lead-cadmium. and bismuth-lead-tin. The rate of hardening coeff. increases with increasing temperature and increasing load, particularly for the eutectic alloys. The relation between the temperature doeff. of hardness a, and the time of loading, T, is given by the func tion T- Keba, where K and Bare constants.--N.A.

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Influence of the height of fall and of temp. on the impact hardness of metals and their alloys. V. P. Shishokin and N. A. Vikhoreva. *J. Tech. Phys.* (U. S. S. R.) 10, 509-4 (1940). An impact wt. of 0.91 kg., with a ball 10 mm. in diam. was dropped from heights of 10-70 cm. onto the surface of Cu, Ni, Pb, Al, Sn, Cd and Bi, and the eutectic alloys: Bi-Cd, Pb-Cd, Bi-Sn, Pb-Sn, Bi-Cd-Pb, Cd-Pb-Sn and Bi-Cd-Pb-Sn. If d is the diam. of the impression and h the height of fall, $d = a_1h^n$. Since the impact hardness (H_i) = $a_2d^{-4.1}$, $H_i = a_3h^{-4.1n}$. For the metals studied $-4.1n$ varies from 0.80 to 1.16. The dependence of d on temp. is expressed by $d = Ke^{at}$, which leads to $H_i = K_1e^{-4.1at}$. The temp. coeff. of impact hardness, $-4.1\alpha_i$, is lower than the temp. coeff. of static hardness and varies inversely with the m. p. of the metal.

Roksalana Gamow

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2

Geometric Transformation of Components in Binary and Ternary Systems in the Case of the Formation of a Chemical Compound. V. P. Shishokin (*Izvest. Sekt. Fiziko-Khimich. Analiza.* (*Ann. Secteur Anal. Phys.-Chim.*), 1940, 12, 5-10).—[In Russian.] A simple graphical method is given which enables one to transform the co-ordinates of any point in a simple ternary or binary diagram into the co-ordinates of doubled ternary and binary diagrams and *vice versa*. The method is based on the simple geometric relations which apply when the composition of equilibrium systems is represented in the form of a triangular diagram. A. B.

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The Calculation of the Temperature Coefficients of Hardness and of Efflux Pressure. V. P. Shishokin (*Izvest. Sekt. Fiziko-Khimich. Analiza.* (*Ann. Secteur Anal. Phys.-Chim.*), 1940, **12**, 11–13).—[In Russian.] It is shown that there is a linear relation between the logarithm of the diameter of the Brinell impression and the hardness and also between the logarithm of the diameter and temperature. The slope of the second plot gives the temperature coeff. of hardness. The temperature coeff. of the efflux pressure can similarly be obtained from the readings of the testing machine used.—A. B.

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PROCESSES AND PROPERTIES INDEX

The Influence of Some Factors on the Relation Between Chemical Composition and Solubility (Fusibility). V. P. Shishokin (*Izvest. Sekt. Fiziko-Khimich. Analiza.* (*Ann. Secteur Anal. Phys.-Chim.*), 1940, 12, 213-227).—[In Russian.] Starting with the early thermodynamic equations giving the crystallization temperature in terms of the alloy composition (Le Chatelier, and others), S. surveys the work that has been done on this problem. It is shown how the original equations have to be corrected to allow for the effect of such factors as the variable heat of fusion and solution, dissociation and association, atomic dimensions, and valency. All these corrections are found to have only a restricted validity and to be applicable only to certain equilibrium diagrams. No general expression uniformly applicable to all systems is at present available.—A. B.

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M

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*The Effect of the Speed of Deformation on the Hardness of Lead-Mercury Alloys. V. P. Shishokin, A. I. Kryagova, and N. A. Vikhoreva (*Zhur. Tekhn. Fiziki*, 1941, 11, (12), 1109–1114).—(In Russian.) A max. hardness value was found in the hardness-composition curve in the range 10–25% of mercury when loads of short duration and small rates of increase of loading and impact hardness were used. For longer times of loading and larger rates of increase of loading, a max. hardness was obtained in the range 10–15% of mercury. At higher temperatures and larger loads, the sharpness of the maximum on the curve increases. A tentative explanation of this type of hardness-composition curve is put forward.—N. A.

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The Effect of the Rate of Deformation on the Hardness of Lead-Mercury Alloys. V. P. Shishokin and N. A. Vikhoreva (*Trudy Leningrad. Politekhn. Inst. im. M. I. Kalinin*, **1946**, (1), 16–22).—[In Russian]. Experiments were carried out on the hardness of lead-mercury alloys containing 0–30% mercury, using a 10-mm.-dia. ball. The temp. and time of loading were varied, and the results plotted against composition. Impact-hardness determinations were also made. For small rates of deformation, max. hardness occurs in the region of 13·5 wt.-% mercury (12·8 at.-%), which corresponds with max. lattice distortion.—N. B. V.

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SHISHOKIN, V.P.; KRYAGOVA, A.I.

The interdependence of thermal isolation and the composition of Portland cement. Trudy Len.politekh.inst. no.4:95-99 '47. (MLRA 6:8)
(Cement)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

SHISHOKIN, V.P.

Analytic and graphic methods in hydrochemical and geochemical research. Trudy Len.politekh.inst. no.4:100-109 '47. (MLRA 6:8)
(Geochemistry)

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SHISHOKIN, V. P.

Influence of the rate of deformation on the relationship between chemical composition and hardness in systems of the eutectic type. V. P. Shishokin and A. A. Telitsyn. *Zhur. Tekh. Fiz.* 22, [illegible] (1952).—The influence of rate of deformation on the relation between chem. compn. and hardness was studied in the systems Cd–Bi, Cd–Zn, Cd–Pb, Sn–Pb, and Pb–Sb at 10 atom % intervals. Hardness detn. was made by the following methods: (1) impact, representing the highest rate of deformation, (2) statistical, by application of load for different periods, (3) Gagarin press, and (4) water loading, const. rate of addn. of water to a 43 l. loading container over a period of 5 and 120 min. The results obtained showed that the relation can deviate plus or minus from the additivity rule. Deviation was found to hold for all methods of expressing compn. These special properties of eutectic alloys are stipulated by the following: (a) high degree of dispersion, (b) regular distribution of components, (c) intensified influence of intercryst. laminae, (d) better developed mechanism of interaction between components. Reduction of rate of deformation or deformation at elevated temp. markedly smooths variation in hardness. Eutectic alloys have a low coeff. of hardness. Detn. of hardness with a Gagarin press cannot give correct results because of variable rate of loading depending on alloy. The latter failing was eliminated by application of the water-loading technique. It is hypothesized that submicroscopic recrystn. takes place in each phase on deformation. There is an indication that a change in relation between metallic and covalent bonds takes place on change of temp. and rate of deformation. V. N. [illegible]

Met

(2)

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Shishokin, V. P.

USSR/Chemistry - Periodic System Jun 53

"Secondary Periodicy in D.I. Mendeleyev's Table of Elements," V.P. Shishokin, Leningrad Polytechnic Inst imeni M. I. Kalinian

Zhur Obshch Khim, Vol 23, No 6, pp 889-893

The relationship between the slopes of the straight lines expressing Moseley's Law and the order number of the elements is detd by a periodic curve. Along a vertical line in the table the ionization potentials of the elements of the principal sub-groups change periodically depending on the number of the period. There is a periodic change of the at wt,

273T23

at vol, and cryst radii of pos and neg ions along a vertical line. Periodic change in the heats of formation of chem compds along a vertical line is connected with a corresponding change in the ionization potentials.

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SHISHOKIN, V.P.

USSR.

Secondary periodicity in the periodic chart of D. I. Mendeleev. V. P. Shishokin. J. Gen. Chem. U.S.S.R. 23, 929-33(1953)(Engl. translation).—See C.A. 48, 3080a.

H. L. H.

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SHISHKIN, V. P.

USSR/Chemistry

Card 1/2

Author : Shiskokin, V. P.

Title : Relation between heat of formation of chemical compounds and the disposition of elements in the D. I. Mendeleyev table.

Periodical : Zhur. Ob. Khim. 24, Ed. 5, 745 - 751, May 1954

Abstract : The heats of formation of chemical compounds change periodically in the groups and periods of the Mendeleyev table. Due to the presence of a periodicity in the change of heats of formation of chemical compounds the thermochemical Kapustinskiy logarithm loses its theoretical basis and cannot be practically confirmed. There is a relation between the heats of formation of chemical compounds and the ionizing potentials of the elements. The heats of formation are inversely connected with the ionization potential of the cation (oxidizer) and directly connected with the ionization potential of the anion (reducing agent). There is a linear relation (or close to linear) between the sequence number and the square root of the equivalent ionization potential of the elements. The linear relation has a somewhat different form for different groups of compounds and this

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Zhur. Ob. Khim. 24, Ed. 5, 745 - 751, May 1954 (additional card)

Card 2/2

Abstract : is apparently the result of the different bond nature in the compounds. Rules were developed which are applicable for the gaseous and solid state of a substance. These rules enabled various heats of formation of chemical compounds not determined by experiments to be calculated and to introduce corrections into numerous available chemical data. Fourteen references; 1 USSR since 1887. Table, graphs.

Institution : The M. I. Kalinin Polytechnical Institute, Leningrad, USSR

Submitted : October 30, 1953

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Relation between the heats of formation of chemical compounds and the positions of the elements in the periodic system of Mendeleev. V. P. Shishokin. *J. Gen. Chem. U.S.S.R.* 24, 753-8(1954)(Engl. translation).—See *C.A.* 49, 3584c.

H. L. H.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

Category : USSR/Solid State Physics - Mechanical properties of crystals and polycrystalline compounds E-9

Abs Jour : Ref Zhur - Fizika, No 1, 1957 No 1350

Author : Shishokin, V.P., Ageyeva, V.A.
Inst : ~~Leningrad Polytechnic~~ Inst., Leningrad Pedagogical Inst., USSR

Title : Concerning the Relationship Between the Hardness and the Composition of the Diluted Solid Solutions

Orig Pub : Fiz. metallov i metallovedeniye, 1956, 2, No 1, 176-180

Abstract : The loaded hardness of dilute solid solutions of Bi and Sn in Pb and of Hg in Cd were investigated at various temperatures and various speeds of loading. The hardness was measured with a Brinnel press using the impact method, the static method, a sphere, and a cone at various loading durations and using also the water-loading method. At low temperatures and high speeds of deformation one abserves in Pb-Bi and Pb-Sn alloys a gradual increase in hardness with increasing concentration of the solid solution. When the hardness is determined at an increased temperature and at slow deformation rates, the hardness has a maximum within the region where the solid ~~exists~~ solution. Cd-Hg alloys exhibit under all test conditions a reduction in hardness with increasing mercury concentration. It is proposed that

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

Category : USSR/Solid State Physics - Mechanical properties of crystals and polycrystalline compounds E-9

Abs Jour : Ref Zhur - Fizika, No 1, 1957 No 1350

the value of the hardness depends on causes that act in opposite directions: at low temperatures and at high deformation speeds the hardness is determined primarily by lattice distortions, and at high temperatures and low loading speeds it is determined primarily by polarization phenomena (mutual interactions of the atoms).

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

SHISHOKIN, V.P.

Thermochemical logarithmic curves. Zhur. fiz. khim. 31 no.6:1414-1416 Je '57. (MIRA 10:12)

1. Leningradskiy politekhnicheskiy institut im. M.I. Kalinina.
(Thermochemistry—Graphic methods)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

SOV/163-58-4-36/47

18(7)

AUTHORS: Shishokin, V. P., Nikerov, A. E.

TITLE: On the Problem of the Maximum of Mechanical Properties Within the Area of Diluted Solid Solutions (K voprosu o maksimume mekhanicheskikh svoystv vnutri oblasti razbavlennykh tverdykh rastvorov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 4, pp 207-213 (USSR)

ABSTRACT: The solid solutions of mercury in cadmium and in lead, as well as those of bismuth in lead, were investigated here. The alloys were investigated according to previously described processes (Refs 7, 8). The following facts were ascertained by the experiments: The change in hardness of diluted solid solutions at an increased concentration of the dissolving metal is determined by two factors acting in opposite directions. On the one hand, the volume factor promotes lattice distortion and increases the hardness. On the other hand, the polarization phenomena, i.e. the mutual influence of atoms, cause a reduction of the hardness. As the volume factor is independent of physical conditions, the polarization phenomena, however,

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On the Problem of the Maximum of Mechanical Properties Within the Area of Diluted Solid Solutions SOV/163-58-4-36/47

increase at an increase in temperature and a reduction of deformation speed, the hardness of diluted solid solutions determined under different conditions becomes, at increased concentration, either greater or smaller or shows a maximum. There are 3 figures and 15 references, 10 of which are Soviet.

ASSOCIATION: Leningradskiy politekhnicheskiy institut (Leningrad Polytechnic Institute)

SUBMITTED: October 1, 1957

Card 2/2

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

Leningrad. Politekhnicheskiy institut imeni M. I. Kalinina

Metallovedeniye (Physical Metallurgy) Moscow, Mashgiz, 1959. 107 p. (Series: Its: Trudy, vyp. 202) 2,300 copies printed.

Sponsoring Agency: Ministerstvo vysshego obrazovaniya SSSR.

Resp. Ed.: V. S. Smirnov, Doctor of Technical Sciences, Professor; Ed.: G. A. Kashchenko, Professor; Tech. Ed.: L. V. Shchetinina; Managing Ed. for Literature on the Design and Operation of Machinery (Leningrad Division, Mashgiz): F. I. Petisov, Engineer.

PURPOSE: This collection of articles is intended for engineers, technicians, and research workers in the fields of physical metallurgy and the heat treatment of metals.

COVERAGE: The papers in this collection contain the results of experimental work dealing with the study of constitution diagrams of metal systems, the nature of solid solutions, aging of complex alloys, processes occuring during the heating and cooling of alloys, and the thermochemical treatment of steel.

Card 1/8

Conchar, V. N. Effect of Copper on the Aging of Aluminum Alloyed With Magnesium and Zinc 43

The author presents results of an investigation of the aging of alloys of the systems Al-Mg-Zn and Al-Mg-Zn-Cu as a function of their composition. He shows that chemical bonds characteristic of the Al-Mg-Zn solid solution are present even during the decomposition of a supersaturated Al-Mg-Zn-Cu solid solution.

Shishokin, V. P., V. A. Agayara, and N. A. Vikhoreva. Determination of a Speed Index of Hardness as a Method of Physicochemical Analysis 56

It is shown that the determination of hardness on the basis of variations in the duration of the action of a load may be useful in studying transformations in alloys.

Shishokin, V. P., and N. A. Vikhoreva. Concentration Method of Determining Long-time Hardness 65

This method consists in the repeated pressing of a cone into the same spot on a specimen. This results in a series of successive impressions. The authors establish a relationship between the deformation (by the diameter of the impression) and the duration of the action of the load.

Tsobkallo, S. O., and Yu. F. Balandin. Investigation of the Elastic Limit and Elastic Aftereffect in Steel Ribbon Springs 68

The authors give the results of an investigation, by a new method, of the nature of the imperfect elasticity of certain spring steels. It is shown that in determining the mechanical properties of spring steel by ordinary methods, considerable emphasis should be laid on the elastic aftereffect and the elastic limit, the latter being considered as depending on the duration of action of the force.

Tsobkallo, S. O., and Yu. F. Balandin. Effect of Workhardening and Low-temperature Annealing on the Elastic Limit and Elastic Aftereffect in Nonferrous Spring Alloys 79

The authors give the results of a comparative study of the mechanical properties of three spring alloys, tin-phosphorus, beryllium-bronze, and German silver. The elastic limit and elastic aftereffect, little-studied characteristics, are assumed to be of basic importance. It is shown that heat treatment is decidely helpful in improving the alloys with respect to these properties.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

18(7), 18(6) SOV/163-59-1-31/50

AUTHORS: Shishokin, V. P., Vikhoreva, N. A.

TITLE: Concentric Method of Long-term Hardness Determination as a Method of Physicochemical Analysis (Kontsentratsionnyy sposob opredeleniya dlitel'noy tvordosti kak metod fiziko-khimicheskogo analiza)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, Nr 1, pp 165 - 167 (USSR)

ABSTRACT: In this investigation the long-term hardness was determined by impressing a cone successively into the same indentation, which thus can be described as a method of concentric indentations. The opening angle of the cone was 90°. Lead, tin, cadmium, and bismuth, and the eutectic alloys and solid solutions formed by these metals were investigated. In all cases a rectilinear relationship was found to exist between the logarithm of the indentation diameter and the logarithm of the load time. Eutectic alloys exhibited the greatest reduction of hardness with increasing duration

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of load time. Variations of the load between 16.4 -62 kg exert no influence upon the ratio hardness-load time. The relationship between the indentation diameter d and the load time τ is expressed by the formula $d = a\tau^n$, where a and n are constants depending upon the composition and the structure of the alloy. As, however, between the Brinell hardness H_B and the indentation diameter d there exists the relationship $H_B = a_1 d^{-2.04}$ (Ref 2), the yields $H_B = a_2 \tau^{n'}$, where $n' = 2.04\ n$, n can be determined according to a formula given in this paper. n' is the index of the hardness variation rate and is a measure of long-term hardness. A parallel course is found between the variation of n' and the thermal coefficient of the hardness (Ref 6). A reduction of the deformation rate exerts the same influence upon the mechanical properties as a rise in temperature. The factors which are the cause of the varying magnitude of n' must also influence the thermal coefficient of hardness. The principal factor influencing the modification of hardness is the

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Concentric Method of Long-term Hardness Determination as a Method of Physicochemical Analysis SOV/16?-59-1-31/50

displacement of the equilibrium in the following reversible process: consolidation $\rightleftarrows$ stress relief (Ref 7). In eutectic alloys this displacement may be connected with the solution and precipitation processes taking place at the contact surfaces between the phases (Ref 8). In solid solutions the displacement of equilibrium due to a change of temperature and of the rate of deformation can be determined by variations of the volume and of the polarization conditions (Ref 9). There are 1 figure, 1 table, and 9 references, 7 of which are Soviet.

ASSOCIATION: Leningradskiy politekhnicheskiy institut (Leningrad Polytechnical Institute)

SUBMITTED: April 5, 1958

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18.8200

SOV/126-8-6-23/24

AUTHORS: Shishokin, V.P. and Nikerov, A.E.

TITLE: On the Question of the Dependence of Hardness on the Composition of Multi-Phase Alloys

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 6, pp 934-938 (USSR)

ABSTRACT: According to one of the existing points of view (Ref 4, 9, 10, 15 and 16), the reason for the absence of an additive dependence of hardness on composition is due to an unsuccessful choice of units for the measurement of concentration. The authors prove mathematically that in a general case the hardness is a non-linear function of composition, irrespective of the units in which the latter is measured, and arrive at the conclusion that a linear dependence of hardness on the composition of alloys, formed by mechanical mixture of constituents, exists only in one particular case. In the general case such a dependence will be non-linear. The form of the functional dependence is given with which any property must conform in order to be a linear function of composition in the general case. The above ideas are generalized for alloys containing any number of phases. There are 2 figures and 4

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05820
SOV/76-33-10-18/45

5 (4)

AUTHORS: Shishokin, V. P., Ageyeva, V. A., Vikhoreva, N. A.

TITLE: Time Hardness as a Method of Physicochemical Analysis

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 10, pp 2222 - 2229 (USSR)

ABSTRACT: The authors made experiments on the variation in hardness of various alloys in dependence on the variation in composition at various temperatures and various durations of strain. Bismuth-cadmium alloys (2.7, 18.7, 44.6, 62.2, 90.9 At.% Bi), bismuth-antimony alloys (6, 15, 25, 50, 75 At% Bi), bismuth-lead alloys (5, 10, 20, 30, 33.3, 56.3, 70, 95 At% Bi), the solid solution of bismuth in lead (6.25, 12.5, 15 and 17.5 At% Bi), aluminum-zinc alloys, cadmium-mercury alloys (6.2, 12.5, 18.7 % Hg) and lead-mercury alloys (5.2, 10.3, 12.9, 15.4, 20.5, 25.6, 31 % Hg) were used for this purpose. The alloys were subjected to thermal treatment and loaded (10, 34.4, 36, 39, and 69.4 kg) for various times (5, 30, 150, 720 and 1440 min). The resultant diagrams are discussed (Figs 1-7) with reference to publications by N. S. Kurnakov, A. N. Akhnazarov (Ref 10), A. I. Glazunov, M. M. Matveyev (Ref 11), V. A. Nemilov (Ref 12), V. Ya. Anosov (Ref 13),

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SHISHOKIN, V.P.; AGEYEVA, V.A.; VIKHOREVA, N.A.

Determination of a rapid hardness index as method of physicochemical analyses. Trudy LPI no.202:56-64 '59. (MIRA 12:12)
(Metals--Testing) (Hardness)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

SHISHOKIN, V.P.; VIKHOREVA, N.A.

Concentrated method of determining durable hardness. Trudy LPI no.202:65-67 '59. (MIRA 12:12)
(Metals--Testing) (Hardness)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

SHISHOKIN, V.P.; NIKEROV, A.E.

Using empirical formula parameters connecting hardness with temperature, time length of loading effect, and pressure to determine the solubility boundaries in the solid state. Izv.vys. ucheb.zav.; chern.met. no.3:91-95 '60. (MIRA 13:4)

1. Leningradskiy politekhnicheskiy institut i Leningradskiy pedagogicheskiy institut.
(Metals--Hardness)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

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80534
S/126/60/009/05/018/025
E021/E335

18.1000
18.8200

AUTHORS: Shishokin, V.P. and Nikerov, A.E.

TITLE: The Influence of Temperature and Time of Loading on the Relation Between Hardness and Composition of Dilute Solid Solutions

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 5, pp 768 - 777 (USSR)

ABSTRACT: The hardness of several solid solutions was determined using different loads (18.5, 28.5, 43.5 and 61.7 kg), various times of loading (1, 6, 36, 216 and 1 296 min) and various temperatures with a load of 28.5 kg for 10 min. The results are shown graphically in Figures 1-12, where the diameter of the indentation is plotted against concentration of alloying element. Figure 1 shows the effect of mercury additions to cadmium. There is a decrease in hardness with increase in concentration of mercury. This decrease is greater at higher temperatures and lower periods of loading. Figure 2 shows the hardness of lead-mercury alloys. In all cases, there is a maximum at 10-15% Hg and

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E021/E335

The Influence of Temperature and Time of Loading on the Relation Between Hardness and Composition of Dilute Solid Solutions

the sharpness of the maximum increases with increase in load and period of loading. The lead-bismuth system (Figure 3) shows a maximum at 6-15% bismuth at higher temperatures and longer periods of loading. The tin-mercury system (Figure 4) in the limits of solid solubility shows an increase in hardness with increase in mercury concentration. Similar results were obtained for the tin-antimony system (Figure 5), the cadmium-silver system (Figure 6), the lead-cadmium system (Figure 7), the lead-tin system (Figure 8), the lead-antimony system (Figure 9), the lead-sodium system (Figure 10) and the bismuth-zinc system (Figure 11), all tested in the range of solid solubility. The copper-zinc system shows a gradual increase in hardness at 20 and 520 °C. The curves of the Meyer hardness, however, for this system show maxima (Curves 1 and 2, Figure 12). Kurnakov (Ref 8) showed that normally the hardness of solid solutions increases with increase in alloying components. The present results have shown that this is not always the case in alloys with a wide range of solid solubility. If the testing tempera-

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

SHISHOKIN, V.P.; BAZILEVSKIY, L.N.

Durable hardness of low-melting alloys at various temperatures. Fiz. met. i metalloved. 11 no.6:942-943 Je '61. (MIRA 14:6)

1. Leningradskiy politekhnicheskiy institut imeni M. I. Kalinina i Leningradskiy pedagogicheskiy institut imeni A. I. Gertsena.
(Alloys--Testing)
(Metals, Effect of temperature on)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

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26545

S/076/61/035/008/008/016
B105/B201

18.8200 1413 1327 2808

AUTHOR: Shishokin, V. P., and Nikerov, A. E. (Leningrad)

TITLE: Application of parameters of empirical formulas correlating hardness to temperature, to duration of load action, and to pressure for determining the limits of solubility in the solid state

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 8, 1961, 1763-1768

TEXT: According to rule, the hardness of metals and alloys depends upon magnitude of load, duration of load action, and temperature. The diameter of the impression as a function of load (Meyer formula) is expressed by:

$P = ad^n$ (1). $H = ae^{\alpha t}$ (2) is valid; (H = hardness). At temperatures, at which a physicochemical transformation takes place, α is variable. The character of the change of the temperature coefficient permits estimating the transformation. For chemically individual substances, the said

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26545

Application of parameters... S/076/61/035/008/008/016
B105/B201

coefficient is directly proportional to the expansion coefficient, and inversely proportional to the melting temperature. In binary alloys it grows with an increase of the second component, and passes through a maximum with eutectic alloys. In solid solutions it comes close to the coefficients of the components. In addition, $H = a\tau^n$ (3); a,n = constants depending on test material and experimental conditions. n is inversely proportional to the melting temperature, and directly proportional to the temperature coefficient; it varies in parallel to the latter in constitution diagrams. A study has been made here of the effect of composition upon the parameters (exponent and pre-exponential factor) of empirical equations for primary solid silver solutions in cadmium, mercury solutions in tin, sodium, cadmium, and antimony solutions in lead. Accurately weighed metal portions were melted, cast in round iron molds, and hardened for 5 - 10 days at about 50°C below the melting temperatures of the alloys. The Brinell hardness number was determined by the apparatus described by the first author (V. P. Shishokin: Zh. Prikl. khimii, 2, 675, 1929).

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

26545

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B105/B201

Application of parameters...

$H_B \approx 4P/\pi d^2$ (5) was obtained from $H_B = 2P/\pi D(D - \sqrt{D^2 - d^2})$ (4) by means of a Taylor series and by neglecting the series terms of the power of $\xi 1$. Using the hardness-versus-impression diameter function under definite conditions, formula $d = a_\tau \tau^{n_\tau}$ (6) was derived from (3) for $H = bd^m$, and $d = a_t \cdot 10^{\alpha_t t}$ (7) was obtained from (2). $d = a_p P^{n_p}$ (8) was derived from (1). a_τ and n_τ were determined at room temperature by means of a cone under a load of P = 28.7 kg, while a_p and n_p were determined by means of a 10-mm sphere at τ = 10 min and P = 26.8 kg. τ rose from 1 to 1296 sec, P from 18.5 to 61.7 kg, and t from 20 to 180°C. Considering that the experimental conditions were constant, (6), (7), and (8) are functions of the compositions (Figs.1-5). While the parameters change monotonically with composition in the one-phase region, a transition from the one-phase to the two-phase region results in numerous salient points of the curves: this is

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especially true for the curves of a_p, n_p, and n_τ, which show the limit of solubility of one metal in the other at ordinary temperatures. Results are in good agreement with data available in the literature. In curves describing the temperature dependence of parameters, especially in dynamic tests, a salient point will hardly appear or not at all. A salient point is also observed in hardness-versus-composition curves. The parameters of empirical formulas may be classified into two groups: (I) and (II). Hardness is determined by two processes taking place simultaneously, namely, hardening and relaxing, and having different effects upon either of the above two groups. The pre-exponential factors in (6), (7), and (8) are to be ascribed to (I). They depend on units in which variables and impression diameter are measured, and have definite dimensions. The remaining parameters belong to (II), and, with the exception of α_t, are dimensionless. Hardening and relaxing processes can be clarified by accurate studies of the parameter changes. Since the parameters of (6), (7), and (8) are readily affected characteristics of the physicochemical state of the systems, a study of them as functions of the alloy concentrations

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Application of parameters....

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may be of use in the investigation of physicochemical transformations. A. M. Korol'kov (Ref. 10: Izv. AN SSSR, Otd. tekhn. n., No. 1, 114, 1949), showed that a salient point of the hardness - composition curve did not in all cases take place at the phase boundary; this fact rendered the determination of the solubility limit more difficult. There are 6 figures and 10 references: 7 Soviet and 3 non-Soviet. The reference to the English-language publication reads as follows: Ref. 8: L. I. Groen, Nature, 174, 836, 1954.

ASSOCIATION: Leningradskiy politekhnicheskiy in-t im. M. I. Kalinina (Leningrad Polytechnical Institute imeni M. I. Kalinin). Leningradskiy pedagogicheskiy in-t im. A. I. Gertsena (Leningrad Pedagogical Institute imeni A. I. Gertsen)

SUBMITTED: November 26, 1959

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APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

S/126/63/015/001/009/029
E073/E420

AUTHORS: Shishokin, V.P., Bazilevskiy, L.N.

TITLE: On the relation between composition and hardness at various temperatures in the system magnesium-cadmium

PERIODICAL: Fizika metallov i metallovedeniye, v.15, no.1, 1963, 76-81

TEXT: The hardness of alloys in the system Mg-Cd at the temperatures 20, 70, 120, 170, 220 and 300°C was studied. The alloys were prepared in a graphite crucible under a flux, cast in a steel mould, polished, homogenized and then annealed (120 hours at 210°C then 20 hours at 100°C and 20 hours at 50°C). The hardness was measured at 20°C with a load of 282 kg and at the higher temperatures with a load of 68 kg. It is shown that at room temperature the compounds Mg_3Cd and $MgCd + MgCd_3$ have a minimum hardness. With increasing temperature the hardness minimum for Mg_3Cd disappears. At 300°C, i.e. above the "order-disorder" transition temperature of the compound MgCd, the composition vs. hardness curve rapidly changes its direction in the range of 40 to 42 at.% Cd concentration. These results are

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

shown in Fig.3. There are 3 figures.

ASSOCIATIONS: Leningradskiy politekhnicheskiy institut im. M.I.Kalinina (Leningrad Polytechnic Institute imeni M.I.Kalinin)
Leningradskiy pedagogicheskiy institut im. A.I.Gertsena (Leningrad Pedagogic Institute imeni A.I.Gertsen)

SUBMITTED: January 6, 1962 (initially)
April 30, 1962 (after revision)

Fig.3. Dependence of the diameter of indentations on the composition of Mg-Cd alloys at the following temperatures: Curves 1 and 2 - 20°C; curve 3 - 70°C; curve 4 - 120°C curve 5 - 170°C; curve 6 - 220°C; curve 7 - 300°C. Curve 1 - load 282 kg; curves 2 to 7 - load 68 kg.

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On the relation between ...

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E073/E420

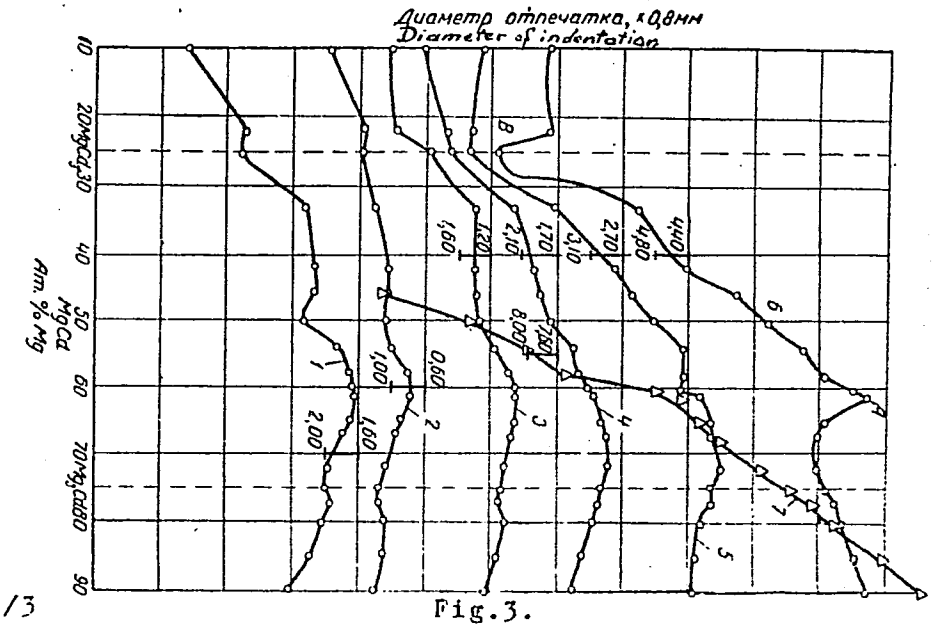

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Fig.3.

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SHISHOKIN, V.P.; MAZURIN, O.V.; GRECHKIN, N.P.

Bibliography. Zhur. prikl. khim. 37 no. 4:932-936 Ap '64. (MIRA 17:5)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

SHI HOKIN, V.[illegible]; BAZILEVSKIY, L.N.

Interconnection between hardness, temperature, and duration of load application on metals and alloys. Trudy LPI no.234:25-30 '64. (MIRA 17:11)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

SHISHOKIN, V.P.; AGEYEVA, V.A.; VIKHOREVA, N.A.

Effect of loading on the velocity index of cone hardness.
Trudy LPI no. 251:15-17 '65 (MIRA 19:1)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

SHISHOKIN, V.P.; BAZILEVSKIY, L.N.

Interrelation between the velocity, temperature, and force indices of hardness. Trudy LPI no. 251:10-14 '65 (MIRA 19:1)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

SHISHOKINA, K. V.

USSR/Metals - Anomalous Extinguishment Feb 52

"Anomalous Variation of Extinguishment of Steels With Low Carbon Content During Rising Temperature," L. A. Glikman, K. V. Shishokina

"Zhur Tekh Fiz" Vol XXII, No 2, pp 300-307

Attempts to clarify phys nature of specified problem. Phenomenon is particularly conspicuous in temp range 50-150°C with a max at 100°C. It is assumed that anomalous variation of decrement is connected to diffusion processes of Ni-atoms, dissolved in alpha-iron. Indebted to N. N. Davidenkov. Received 31 Jul 51.

209T87

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

SHISHOKINA, K. V.

Shishokina, K. V.

"The effect of residual stresses and of the inclination of material to slow breaking down on the stability of the contact parts of pressing units." Min Heavy Machine Building USSR. Central Sci Res Inst of Technology and Machine Building (TsNIITMash). Moscow, 1956. (Dissertation for the Degree of Candidate in Technical Science.)

Knizhnaya Letopis'
No. 18, 1956. Moscow.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

AUTHORS: Kobrin, M.M., Candidate of Technical Sciences and Shishokina, K.V., Ing. (TsNIITMASh).

TITLE: Residual stresses in surface hardened components after tempering them at martensite decomposition temperatures. (Ostatochnye napryazheniya v poverkhnostno-zakalennykh izdeliyakh posle otpuska pri temperaturakh raspada martensita).

PERIODICAL: "Metallovedenie i Obrabotka Metallov" (Metallurgy and Metal Treatment), 1957, No.5, pp.29-33 (U.S.S.R.)

ABSTRACT: Golovin (2 and 3) found that in the surface-hardened layer of medium carbon steel components a change in the residual stresses, from compressive to tensile, takes place in the case of tempering. The authors of this paper studied the residual stresses on surface hardened components after low temperature tempering on discs of 180 and 100 mm dia., 17 mm high made of steel containing 0.93% C; 1.40% Cr; 0.12% Ni; 0.35% Si; 0.33% Mn; 0.024% S and 0.026% P. Prior to the surface hardening the discs were annealed for three hours at 780°C and for two hours at 720°C, cooled in the furnace down to 50°C and then hardened in oil from 830°C and tempered at 730°C followed by cooling in the furnace. The surface hardening was effected by a 2500 c.p.s. current and following that the discs were tempered in the furnace at 150, 300 and 400°C during ten hours. A change of the

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

KOBRIN, M.M.; SHISHOKINA, K.V.

Cases of "delayed action" rupture in steel. Zav. lab. 23 no.5:597-600 '57. (MLRA 10:8)

1. TSentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya.

(Steel--Testing)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

KOBRIN, M.M., kand.tekhn.nauk; RABINOVICH, V.P., inzh.; SHISHOKINA, K.V., inzh.

Strength of rotating disks with residual stresses. Energomashinostroenie 4 no.4:12-16 Ap '58. (MIRA 11:7)
(Disks, Rotating)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

129-58-5-12/17

AUTHORS: Kobrin, M. M., Candidate of Technical Sciences and Shishokina, K. V., Engineer.

TITLE: Retarded Failure of the Reinforcing Rings of the Supporting Rolls of Cold Rolling Stands (Zamedlennoye razrusheniye bandazhey opornykh valkov kholodnoy prokatki)

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, Nr 5, pp 43-48 (USSR)

ABSTRACT: In addition to known types of failures of rolls, there have been cases of brittle cracking of the reinforcing rings as a result of which a brittle fracture occurs in the tubular reinforcing rings which were tightly (shrink) fitted on the backing roll; the fracture was orientated in the direction of the generatrix. The fractured reinforcing rings consisted of 2000 mm long tubes with an outside diameter of about 1600 mm and 800 inside diameter produced from 9Kh type steel with vanadium which, after annealing, was subjected to further heat treatment by repetitive hardening in water and in oil. The hardened rings were tempered at 400°C so as to obtain the required hardness of 60 to 75 Shore units. Since little data is published in literature on the

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129-58-5-12/17

Retarded Failure of the Reinforcing Rings of the Supporting Rolls of Cold Rolling Stands

tendency to develop slow failures of steels of this type which are used for such reinforcing rings, the authors have investigated this tendency to slow failure of the steel 9Kh in the hardened and in the tempered states. The composition of the investigated steel was: 0.85% C, 0.32% Mn, 0.28% Si, 0.018% S, 0.027% P and 1.59% Cr. Notched specimens (Figure 2) were used which were subjected to static tension. The specimens were cut from 18 mm dia. rods, heated for three minutes in a salt bath to 830°C and hardened in oil. This was followed by tempering for three hours at 150, 400 and 730°C and cooling in the furnace. The tendency of the material to slow failure was determined in three stages. At first the strength σ_b^{cr} of notched specimens was determined for ordinary short duration tests, establishing for each type of heat treatment the appearance of the fracture, the character of the obtained diagram, the transverse contraction in the notch after fracture and the degree of scattering of the obtained values. In the second stage the specimens were loaded with a constant tensile load for

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129-58-5-12/17

Retarded Failure of the Reinforcing Rings of the Supporting Rolls of Cold Rolling Stands

a duration of 240 hours and, in some cases, for a duration of up to 1000 hours. The third stage consisted of short duration tests of those specimens which did not fracture during the long duration loading of the second stage and also in determining the ductility of the specimens in the notch after fracture; comparison of the plasticity of the specimens in the notch before and after long duration loading enabled evaluation of the changes in the properties of the material. The results of the first stage of the tests are entered in Table 1. Table 2 gives the contraction of the specimens in the notch during the short duration tests carried out on the specimens which did not fracture during the long duration loading. The data given in these tables and in the graphs indicate that the steel 9Kh. shows a tendency to slow failure in the brittle state in short duration as well as long duration loading. Brittleness and a tendency to slow failure was detected after tempering the hardened steel at 400°C, i.e. at the temperature at which the tempering of the reinforcing rings of the backing rolls is carried out. Therefore, the authors recommend using a heat

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Retarded Failure of the Reinforcing Rings of the Supporting Rolls of Cold Rolling Stands

treatment regime which would ensure a high hardness and abrasion stability at the rolling surface and a high ductility of the material in the most highly stressed sections at the surface of the internal hole and this can be achieved, for instance, by surface hardening. There are 5 figures, 2 tables and 7 references, 5 of which are Soviet, 1 German and 1 English.

ASSOCIATION: TsNIITMASh

AVAILABLE: Library of Congress.

1. Steel-Fracture-Analysis 2. Rolling mills-Equipment-Failure
Card 4/4 3. Steel-Rolling equipment-Failure

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

VINOGRADOV, Yu.M., kand.tekhn.nauk; ZELENOVA, V.D., inzh.;
SHISHOKINA, K.V., kand.tekhn.nauk

Using X-ray diffraction and electron diffraction examination in investigating wear-resistant coatings. Trudy NIIKHIMMASH no.27:168-175 '59. (MIRA 14:8)
(Protective coatings--Testing) (X rays--Diffraction)
(Electron diffraction examination)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

PROTSENKO, [illegible]; SHISHOLINA, R.[illegible]; PROTSENKO, A.V.

System Li, Rb, $\|NO_2, NO_3$. Zhur. neorg. khim. 9 no.6:1431-1434 Je '63 (MIRA 17:8)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

SHISHOLINA, R.P., PROTSENKO, P.I.

System Li, Na//NO_2, NO_3. Zhur. neorg. khim. 8 no.12:2741-2743 D '63.

System consisting of the nitrites and nitrates of lithium and potassium. Ibid.:2744-2747 (MIRA 17:9)

1. Rostovskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

PROTSENKO, P.I.; SHISHOLINA, R.P.; IVANOVA, Ye.M.

Reciprocal system consisting of nitrites and nitrates of lithium and cesium. Izv.vys.ucheb.zav.; khim. i khim.tekh. 7 no.2:180-183 '64. (MIRA 18:4)

1. Laboratoriya fiziko-khimicheskogo analiza Rostovskogo-na-Donu gosudarstvennogo universiteta.

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L 35030-65 EPF(n)-2/EPA(s)-2/EWA(c)/EWT(m)/EWP(b)/T/EWP(t) Pt-10/Pu-4 IJP(c)
JD/JG

ACCESSION NR: AP5006378 S/0153/64/007/006/0887/0890

37
36
B

AUTHOR: Protsenko, P. I.; Shisholina, R. P.

TITLE: Differential thermal analysis of lithium, rubidium and cesium nitrite-nitrate systems

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 7, no. 6, 1964, 887-890

TOPIC TAGS: lithium nitrite, lithium nitrate, rubidium nitrite, rubidium nitrate, cesium nitrate, cesium nitrite, phase diagram, differential thermal analysis

ABSTRACT: Phase diagrams of $LiNO_2$-$LiNO_3$, $RbNO_2$-$RbNO_3$ and $CsNO_2$-$CsNO_3$ binary systems were investigated in order to determine the thermal stability range of their solid solutions. This study is important for the chemistry of ferroelectrics and for thermal analysis of salt systems. Cooling and heating curves were plotted using a direct thermocouple and a differential thermoelectric pair incorporating platinum and a platinum-rhodium alloy. An FPK-59 temperature measuring system was used. Liquidus and solidus curves were constructed for each 10 mol %. Heating was at a rate of 3 degrees per minute. Phase diagrams of these systems are shown in Figure 1 of the Enclosure. It was established that solid solutions

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ACCESSION NR: AP5006378

formed by nitrite-nitrate pairs of alkali metals differ greatly in their stability which increases with a decrease in the difference between the lattice energies of the components which comprise these systems. This energy difference decreases steadily from lithium salts to cesium salts. Orig. art. has: 1 table and 1 figure.

ASSOCIATION: Kafedra obshchey i neorganicheskoy khimii, Rostovskiy-na-Donu gosudarstvennyy universitet (Department of General and Inorganic Chemistry, Rostov State University)

SUBMITTED: 19Mar64 ENCL: 01 SUB CODE: TD, MM

NO REF SOV: 007 OTHER: 000

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ENCLOSURE: 01

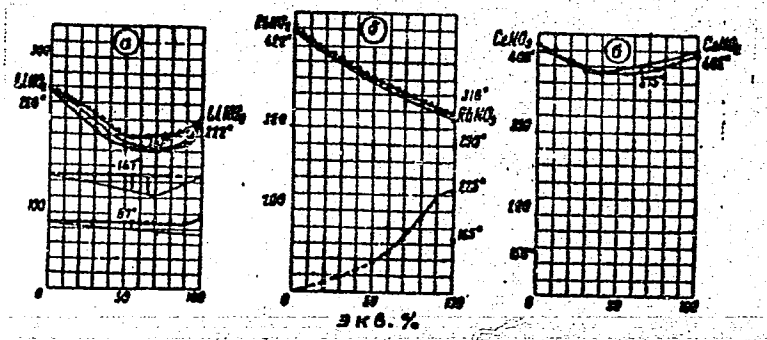

Fig. 1. Phase diagrams of

(a) $LiNO_3$-$LiNO_2$, (b) $RbNO_2$-$RbNO_3$, (c) $CsNO_3$-$CsNO_2$ systems

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

PROTSENKO, P.I.; SHISHOLINA, R.P.

Thermal analysis of the binary systems $LiNO_2$ - $NaNO_2$, $LiNO_2$ - KNO_2, $LiNO_2$ - $RbNO_2$, $LiNO_2$ - $CsNO_2$. Ukr. khim. zhur. 30 no.9:912-915 '64.

(MIRA 17:10)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

PROTSENKO, P.I.; SHISHKOLINA, N.P.

Specific gravity and molar volumes of melts of the system Li, Na NO_2, NO_3. Ukr. khim. zhur. 30 no.12:1292-1296 '64 (MIRA 18:2)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

PROTSENKO, P.I.; SHISHOLINA, R.P.

Differential thermal analysis of the systems $LiNO_2 - LiNO_3$, $RbNO_2 - RbNO_3$, $CsNO_2 - CsNO_3$. Izv.vys.ucheb.zav.; khim.i khim.tekh. 7 no.6:887-890 '64.

(MIRA 18:5)

1. Rostovskiy-na-Donu gosudarstvennyy universitet, kafedra obshchey i neorganicheskoy khimii.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

PROTSENKO, P.I.; SHISHOLINA, R.P.

Conductance of melts in the system Li, Na || NO_2, NO_3. Ukr. khim. zhur. 31 no.10:1048-1052 '65. (MIRA 19:1)

1. Rostovskiy-na-Donu gosudarstvennyy universitet. Submitted March 23, 1964.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

PROTSENKO, P.I.; SHISHOLINA, R.P.

Conductance of melts of the system Li, Cs || NO_2, NO_3. Elektrokhimiia 1 no.9:1064-1071 S '65. (MIRA 18:10)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

RYBAK, V.I.; SHISHONOK, L.N.

Indicator device for the output of computation results from a machine. Avtom.i prib. no.1:37-40 Ja-Mr '63. (MIRA 16:3)

1. Institut kibernetiki AN UkrSSR.
(Electronic digital computers)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

ACCESSION NR: AT4033625 S/0000/63/000/000/0051/0083

AUTHOR: Shishonok, N. A.; Chernogor, F. I.

TITLE: Cybernetic machines of the "Ekzamenator" type

SOURCE: Programmirovannoye obucheniye i kibernetichesldiye obuchayushchiye mashiny* (Programmed instruction and cybernetic teaching machines); nauchno-tekhn. sb. statey. Moscow, Izd-vo "Sovetskoye radio," 1963, 51-83

TOPIC TAGS: teaching machine, programmed instruction, cybernetic machine, linear program

ABSTRACT: The article gives brief descriptions of four teaching machines of the "Ekzamenator" type: the OM-1, OM-4, OM-7 and OM-12. The purpose of each machine is explained, and its operational principle is discussed and described on the basis of a basic circuit diagram and parts list. The design considerations underlying the construction of the machines are analyzed. The order of operation with these units is given, along with examples of card-program compilation. Cybernetic teaching machines of the "Ekzamenator" type are designed to be used in the teaching process for the following purposes: the taking of examinations and quizzes on any subject; the conducting of

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colloquia (seminars) before laboratory work; the conducting of control work; self-monitoring during the process of independent student preparation. Characteristic features of teaching machines of this class are the presence of feedback from the student to the machine and linear program operation. In machines of this type, response input may be effected in the following manners: sampling, digitally-coded and resultant. Teaching machines of the "Ekzamenator" type have limited possibilities in comparison with machines of the "Repetitor" type, which operate on the basis of a ramified program. However, their relative simplicity, inexpensiveness, and the fact that they can be produced on an in-house basis by institutes and organizations of an academic nature without outside help, confer on these machines unquestionable advantages in terms of rapidity of realization and introduction into the teaching process. The program of the OM-1 is interchangeable and includes five questions. After these five questions have been answered, the machine evaluates the responses according to a four-point system. The evaluation appears on a light board and is printed out on a blank form. Underlying the operation of the OM-4 is a relay-system functioning principle. Student response evaluation is made on the "right-wrong" principle on the basis of answers to programmed questions. The unit provides for two modes of operation: "examination" (interrogation, control) and "self-preparation" (self-checking). When working in the "examination" mode, the student is prevented from using the buttons marked "evaluation" and "clear",

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whereas, when operating with the machine set for "self-preparation", the student controls the machine independently. The OM-7-1 operates according to a linear program with the sampler method of response. The answers are coded in a binary six-place code and fed into the machine by means of six tumbler switches. Normally, a card contains only five questions, but the circuitry provides for the possibility of increasing this number to ten questions. The answers to the questions on the cards are fed into the machine sequentially, with the switch set in the following position as the student proceeds from one question to the next. Response evaluation is given both for each question separately, as well as for a question group as a whole. Individual response evaluation is programmed by the card compiler in a point system which runs from 0 to 5. These evaluations are flashed on a lgith board. A correct answer is rated at 5 points, an incorrect answer - at 0 points. Insufficiently accurate answers may be rated from 1 to 4 points at the discretion of the programmer-instructor. When programming the material, instructions must be provided to aid in locating and correcting the error. In order to provide a general evaluation of all the answers given on the cards, incorporated in the system is an adder with a disc which turns a specific number of divisions, using a cog wheel and a start-stop relay system. In order to prevent the student from gaining additional points by repeating the operation of introducing a single correct answer, there is a blocking arrangement which disconnects the windings of the adder relays immediately upon termination of the original introduction of an answer to a given question. Because of this, repeated introduction of a previous or

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modified answer has no effect on the circuitry. The switch turns only in one direction; thus, it is possible to return to a previous question only through the original "zero" position, at which all previous evaluation results are cleared. The OM-12 teaching machine may be used to check home-work assignments and control work, and to take quizzes. In addition, the students may train during independent preparation in order to secure firmly in their minds material that has already been covered. The principle of operation of the OM-12 is based on the comparison of answers with a previously prescribed program. "The OM-1 was designed by V. P. Puganov and A. A. Neven, the OM-4 by E. A. Bernshteyn, G. H. Boyko, V. F. Kushnirenko, I. A. Kovtun, N. K. Rudyachenko and M. L. Khavin, the OM-7 by A. K. Krishtafovich, V. I. Shushpan, N. I. Dy*nnik and V. P. Gavryuk, and the OM-12 by V. M. Petrushevskiy, V. K. Gurnov and A. A. Il'yashenko." Orig. art. has: 13 figures.

ASSOCIATION: None

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Card 4/4

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Shishonok, Nikolay Andreyevich; Repkin, Vasiliy Fedorovich; Barvinskiy, Leonid L'vovich

Principles of the theory of reliability and operation of radio electronic equipment (Osnovy teorii nadezhnosti i ekspluatatsii radioelectronnoy tekhniki), Moscow, Izd-vo "Sovetskoye radio", 1964, 550 p. illus., biblio. Errata slip inserted. 13,000 copies printed.

TOPIC TAGS: circuit reliability, electronic equipment, control statistics

PURPOSE AND COVERAGE: This book treats basic problems of reliability theory and the operation of radioelectronic devices. The authors examine quantitative indicators of reliability and methods of their engineering calculation and statistical evaluation. Methods for basing demands upon reliability are discussed. Ways to increase reliability at the expense of reserving and to operate the apparatus efficiently are taken into account. The authors have considered the influence of preventive measures and repair operations on reliability. The influence of the control system's parameters on the reli-

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ability of the apparatus is also treated. Finally, the authors have dealt with problems concerning the efficiency of complex systems and methods for the simulation of their functioning processes which take reliability into account. The book is intended for university students taking courses in the principles of reliability. It can also be used by engineering and technical personnel who are engaged in the design, manufacture and operation of radio-electronic devices.

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SUB CODE: EC SUBMITTED: 20Nov64 NO REF SOV: 080

OTHER: 011

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L 8333-66 EEC(k)-2/EWA(h)/EWT(1)

ACC NR: AP5025763 SOURCE CODE: UR/0286/65/000/018/0130/0131

AUTHORS: Bogdanov, Yu. V.; Kislova, V. F.; Molchanov, V. N.; Abramtsev, Ye. P.; Shishorin, V. A.; Popov, P. I.; Nikiforov, A. F.

ORG: none

30
B

TITLE: A discrete contactless phase-sensitive pickup. 25 Class 74, No. 174962 [announced by Kuznetsk Scientific Research Coal Institute (Kuznetskiy nauchno-issledovatel'skiy ugol'nyy institut)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 18, 1965, 130-131

TOPIC TAGS: phase meter, 25 magnetic circuit, magnet

ABSTRACT: This Author Certificate presents a discrete contactless phase-sensitive pickup consisting of a fixed toothed magnetic circuit with control windings and a moving magnetic circuit without windings. In order to simplify the pickup and to obtain an unambiguous signal pickup, two readout windings are situated on two external teeth of the fixed magnetic circuit (see Fig. 1). The moving magnetic circuit, which is connected to the moving object, is equipped with one readout tooth.

UDC: 621.083.8:62—503.83

Card 1/2

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ACC NR: AP5025763

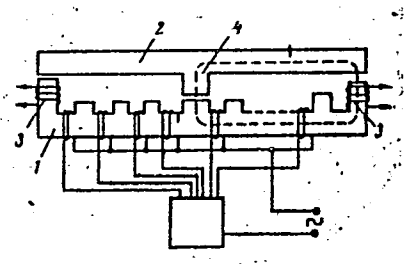

Fig. 1. 1 - Fixed toothed magnetic circuit;
2 - moving magnetic circuit;
3 - readout windings;
4 - readout tooth.

Orig. art. has: 1 figure.

SUB CODE: 09/ SUBM DATE: 07Jul64

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549610019-5

VALENTINI, L.A., kand. tekhn. nauk; DERLYATKA, T.I., inzh.; NAUMENKO, Yu.G. inzh.; SHISHORINA, G.I., inzh.

Destruction of the Kugart Dam and its analysis. Gidr. i mel. 13 no.9:54-61 S '61. (MIRA 14:9)

(Kugart River--Dams)

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SOV/24-58-7-3/36

AUTHORS: Vaganov, R.D., Khripina, L.A. and Shishorina, O.I. (Moscow)

TITLE: Estimation of the Fatigue Strength of Large-sized Components from the Results of Testing Model Specimens (Otsenka ustalostnoy prochnosti krupnogabaritnykh detaley po rezul'tatam ispytaniya model'nykh obraztsov)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, 1958, Nr 7, pp 15 - 23 (USSR)

ABSTRACT: It is often difficult to make tests directly on full-sized components - for example, turbine rotors and tests must then be carried out on models. If the component is variable in section and the properties of the material at the surface have been modified by the manufacturing process, the problem arises of converting the results of model tests to those applicable to the full-scale components. Experiments are described on high- and medium-strength steel specimens of different dimensions and containing notches to obtain suitable stress concentration. The statistical effect of variation in properties of the material is evaluated and

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Estimation of the Fatigue Strength of Large-sized Components From the Results of Testing Model Specimens

it is concluded that the most important factor in comparing model tests with full-scale results is the state of stress at the surface of the material. There are 13 figures, 2 tables and 16 references, 11 of which are Soviet, 4 English and 1 German.

SUBMITTED: April 11, 1958

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SHISHERINA, O.I.
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25(2);14(10) PHASE I BOOK EXPLOITATION SOV/2739

Akademiya nauk SSSR. Institut mashinostroyeniya

Problemy prochnosti v mashinostroyenii, vyp. 3 (Strength Problems in Mechanical Engineering, No. 3) Moscow, Izd-vo AN SSSR, 1959. 94 p. Errata slip inserted. 3,000 copies printed.

Ed.: S.V. Serensen, Academician, Ukrainian SSR Academy of Sciences; Ed. of Publishing House: G.A. Nechayev; Tech. Ed.: N.F. Yegorova.

PURPOSE: This book is intended for design engineers and research workers in the fields of machine building and strength of structures. It may also be useful to students of corresponding specialties in advanced technical schools.

COVERAGE: This is a collection of 5 articles dealing with problems of strength and stability of cylindrical parts. Effect of cut-outs, general conditions for the calculation of endurance, regressive analysis of fatigue, and measurements of limits of fluidity in impact loading are considered. References appear at the end of each article.

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Shneyderovich, R.M. Static Carrying Capacity of Components of the Cylindrical Shell Type 3

The author considers the problem of elastic-plastic deformations of shells by the method of variable parameters of elasticity, and establishes the relationship between applied loads and deformations or stresses

Vagapov, R.D., and O.I. Shishorina. Efficiency of the Unloading Action at a Finite Number of Uniform Openings (Cut-outs) 26

The authors explain the nature of the unloading action in the interaction of multiple cut-outs. They consider separately contour conditions and the sum of stressed conditions from contour functions themselves. They give a simple approximate theory for an unlimited number of cut-outs, and a qualitative theory for their finite number.

Gokhberg, M.M. General Conditions of the Endurance Calculation of Machine Metal Structures 50

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SHISHORINA, O.I.

18(7) PHASE I BOOK EXPLOITATION SOV/2566

Akademiya nauk SSSR. Institut mashinovedeniya

Problemy prochnosti v mashinostroyenii, vyp. 2 (Problems of Strength in Machinery Design, No. 2) Moscow, Izd-vo AN SSSR, 1959. 97 p. Errata slip inserted. 3,000 copies printed.

Resp. Ed.: N.I. Prigorovskiy, Doctor of Technical Sciences, Professor; Ed. of Publishing House: V. M. Klennikov; Tech. Ed.: O.M. Gus'kova.

PURPOSE: This collection of articles is intended for scientific research workers, engineers, and designers.

COVERAGE: This collection of articles deals with stress concentrations. The topics discussed include stress concentrations in holes of equal and unequal ratio, stress and strain distribution in flat notched bars, residual stresses during heat treatment, and stress distribution in a wide strip with a hole near the edge. No personalities are mentioned. References follow each article.

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Problems of Strength (Cont.)

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Vagapov, R.D., O.I. Shishorina, and L.A. Khripina. Approximate Evaluation of Stress Concentration at Mutual Effect of Holes of Unequal Radii 31

The fore-going articles are discussions of investigations made by the author at the Laboratory of Dynamic Strength of Machine Parts, Institute of Mechanical Engineering, Academy of Sciences, USSR. In these articles the authors develop a method of linear superposition of known exact solutions for stress concentrations for each individual hole with approximate stress concentration due to mutual effect of neighboring holes. An experimental check showed full agreement with the approximate analytical solution.

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Zhukovskiy, V.S. Stress and Strain Distribution in Flat Notched Bars in Connection With the Three-dimensional Character of the State of Stress 54

The author investigates stress distribution and concentration in flat steel specimens of varying thicknesses with deep notches. The relationship between stress concentration and the thickness of the specimens is shown in diagrams.

Lomakin, V.A. Theoretical Determination of Residual Stresses During Heat Treatment of Metals 72

In this investigation residual stresses accompanying heat treatment are determined by evaluating plastic deformations occurring during the process and establishing a stress-strain relationship by means of the theory of elastoplastic strains. Test calculations of residual stress distribution in a quenched cylinder fully agreed with other experimental data.

Vagapov, R.D., and O.I. Shishorina. Lateral Compression of a Wide Strip With a Hole Near the Edge 84

The work described in this article was done at the Lab-

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PHASE I BOOK EXPLOITATION SOV/3416

Akademiya nauk SSSR. Institut mashinovedeniya

Voprosy prochnosti materialov i konstruktsiy (Problems of Strength of Materials and Structures) Moscow, 1959. 399 p. Errata slip inserted. 3,200 copies printed.

Resp. Ed.: D. N. Reshetov, Professor, Doctor of Technical Sciences; Ed. of Publishing House: O. B. Gorshkov; Tech. Ed.: S. T. Shikin.

PURPOSE: This book is intended for engineers and scientists concerned with the problems of the strength of materials and construction.

COVERAGE: The book contains 28 articles on the strength of materials in general and of machine construction in particular. This collection was prepared under the direction of the Institute of Mechanical Engineering of the AS USSR in honor of Sergey Vladimirovich Serensen, one of the founders and directors of the national school of strength of materials, who recently completed 30 years of scientific activity. The preface gives a short sketch of his life and professional activities. The collection is divided into two parts. The first part contains 13 articles on general problems of strength and the strength of machine construction materials. The second part contains 15 articles on dynamics and calculation of strength and rigidity. There are references at the end of each article.

Veganov, R. D., and O. I. Shishorina. Effect of Concentrating Stresses Under the Action of Varying Loads 36

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SHISHORINA, O.I.

Experimental investigation of the method of superposition used for solving problems on stress concentration. Probl.proch.v mashinostr. no.4:47-60 '59. (MIRA 13:5)
(Strains and stresses)

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SHISHORINA, O. I.

PHASE I BOOK EXPLOITATION SOV/3974

Ispytaniya detaley mashin na prochnost'; sbornik statey. Po materialam Komiteta prochnosti NTO Mashproma (Testing Machine Parts for Strength; Collection of Articles. Based on Data of the Committee on Strength of Materials of the Scientific and Technical Society of the Machine-Building Industry) Moscow, Mashgiz, 1960. 226 p. Errata slip inserted. 5,000 copies printed.

Reviewer: I.V. Kudryavtsev, Doctor of Technical Sciences; Ed.: S.V. Serensen; Ed. of Publishing House: L.N. Danilov; Tech. Ed.: G.Ye. Sorokina and L.P. Gordeyeva; Managing Ed. for Literature on General Technical and Transport Machine Building (Mashgiz): A.P. Kozlov, Engineer.

PURPOSE: This collection of articles is intended for designers and for workers at plant laboratories and scientific research institutes.

COVERAGE: The articles contain data on the experience gained by industry and research institutes in the field of full-scale and model testing of machine parts for strength. A number of theoretical considerations and the related experimental practice are presented. No personalities are mentioned. Most of the articles are accompained by references.

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